

REMARKS

Claims 1-3, 5-21, 23-31 and 36-40 are pending in this application. Claims 15-21 and 23-27 are allowed. Claim 1-3, 5-10, 28-31 and 36-40 are rejected and claims 11-14 are objected to. The independent claims are 1, 9, 15, 19, 28 and 36. This Amendment amends claims 9, 15, 19, 28, and 36, and addresses each point of rejection raised by the examiner. Favorable reconsideration is respectfully requested.

Preliminary Matters

Claims 9, 15, 19, 28, and 36 are amended to add or move “and” between limitations. The scope of these claims is unchanged.

On page 9 of the Office Action, the examiner mischaracterizes the disclosure of the present application, implying that ultraviolet energy is required for diffusion. Rather, applicants utilized UV illumination to detect and verify their inventive methods (*i.e.*, post-diffusion).

Objections

Claims 11-14 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form. Applicants appreciate the indication that claims 11-14 would be allowed if rewritten in independent form, but respectfully submit that a broader scope of the invention is patentable in view of the art of record. Applicants request that the rewriting of claims 11-14 be held in abeyance until the Examiner has had the opportunity to reconsider the allowability of parent claim 9.

Claim rejected under 35 U.S.C. § 102 in view of Shirasaki

Claims 1-3, 5-7, 9, 28-31 and 36 are rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Patent 5,895,692 to Shirasaki *et al.* (“Shirasaki”).

Independent claim 1 recites:

“applying a dopant dissolved in a solvent onto the organic host material, such that the solvent causes the dopant to diffuse into the organic host material;”

Independent claim 28 recites:

“using a solvent to cause the dopant to migrate into the organic coating;”

Independent claim 36 recites:

“causing the dopant to migrate into the organic layer in areas exposed through the barrier through the use of a solvent;”

Applicants respectfully submit that Shirasaki fails to anticipate each of these recitations.

A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. MPEP § 2131. The fact that a certain result or characteristic may occur or be present in the prior art is not sufficient to establish the inherency of that result or characteristic.

Shirasaki discloses diffusing pigments into a dispersion medium layer. *E.g.*, col. 2, lines 59-65; col. 4, lines 55-60. Pigments are dissolved in a solvent (col. 3, lines 28-29), deposited onto the dispersion medium layer and dried (col. 9, lines 13-24), and then diffused into the dispersion medium layer by heating (col. 7, lines 26-40; col. 9, lines 13-24).

The mere presence of dopant dissolved in solvent prior to diffusion in Shirasaki does not establish “that the same phenomenon of diffusion must have occurred,” as asserted by the examiner. In relying on the theory of inherency, the examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent solvent-induced diffusion necessarily flows from the teachings of Shirasaki. The mere fact that Shirasaki uses dissolved pigment in a liquid solvent does not establish that the liquid solvent would induce diffusion. Nor does the heat-induced diffusion in Shirasaki even suggest a need for a solvent that would induce diffusion.

On page 6 of the Office Action, with regard to the solvent of Shirasaki, the examiner states that applicant has provided no scientific reasoning to contradict the examiner’s assertions. As the examiner has thus far presented nothing more than probabilities and possibilities that the solvent in Shirasaki would induce diffusion, applicants believe that no showing is required at this time. Applicants respectfully request that the examiner clarify whether it is his position that ALL solvents that could be used with Shirasaki necessarily induce diffusion, or whether there is some particular rationale for why someone would use a solvent inducing diffusion in view of Shirasaki.

Further, the examiner’s assertion that “diffusion is caused by essential features which are not present in the claims” is not well-founded. As exemplified by FIGS. 8B and 9 of the present application, the solvents used in the present invention even cause diffusion to occur at room temperature (*i.e.*, without heating). Although the claims are not so limited, this clearly demonstrates a different diffusion mechanism than the heat-induced diffusion taught Shirasaki.

For at least these reasons, applicants submit that independent claims 1, 28, and 36 are not anticipated by Shirasaki. Applicants further submit that dependent claims 2, 3, 5-7, 29-31 are also not anticipated, at least as further limitations on claims 1 and 28.

Independent claim 9 recites:

“applying an organic coating having a dopant over the first electrode; and
removing the dopant from areas of the coating, wherein the areas of the coating from which the dopant is removed remain over the first electrode after the dopant is removed;”

The examiner asserts that solvent is a dopant. During patent examination, the pending claims must be given their broadest reasonable interpretation consistent with the specification. MPEP § 2111. The broadest reasonable interpretation of the claims must also be consistent with the interpretation that those skilled in the art would reach. MPEP § 2111.

The examiner’s assertion that solvent is a dopant is inconsistent with both the usage in the present application and the ordinary use as demonstrated by the art of record (*see, e.g.*, usage of “dopant” at Shirasaki col. 5, line 26; U.S. Patent 6,150,042 to Tamano *et al.* col. 76, line 50 to col. 77, line 65; Chang *et al.*, Appl. Phys. Lett., Vol. 73, No. 18, 2 November 1998, page 2563).

Reconsideration and withdrawal of the § 102 rejections based upon Shirasaki are requested.

Claim rejected under 35 U.S.C. § 102 in view of Antoniadis

Claims 1, 6, 9-10, and 28-29 are rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,719,467 to Antoniadis *et al.* (“Antoniadis”).

In embodiments such as the Example 7 (col. 7, lines 51-56 - cited by the Examiner) Antoniadis includes the steps of:

(1) mixing the conducting polymer with a material such as polyester prior to spin-casting and (2) removing the polyester after spin-casting with a selective solvent (a substance that is a solvent for polyester but not for the conducting polymer), leaving a microporous layer of conducting polymer on the anode. *See* Antoniadis col. 3, lines 52-58.

Thus a dopant (TPD in a TPD:polystyrene mixture) dissolved in a solvent (xylene) is applied to a blended polymer layer containing host material (PANI:CSA) into which polyester (PE) has been mixed (PANI:CSA:PE). As taught at col. 3, lines 52-58, the solvent dissolves the PE , “leaving a microporous layer of conducting polymer on the anode.” The TPD:polystyrene mixture then replaces the PE by moving into the pores left behind by the PE.

Thus, with regard to claims 1, 6, 28, and 29, rather than causing the dopant to diffuse into the organic host material (PANI-CSA), the solvent causes holes to form in the blended polymer layer (the holes being devoid PE as well as devoid of host material.) The dopant may then occupy the holes left behind by the PE. As would be understood by one of skill in the art, such occupation is not a diffusion phenomena.

Further, with regard to claims 9 and 10, the PANI and PE are described as a mixture, whereas camphorsulfonic acid (CSA) is described as the dopant. *See* col. 4, lines 35-37; *see also*

col. 4, lines 50-58. The process of Antoniadis does not remove the dopant (CSA), but rather, washes away polyester (PE). *E.g.*, col. 7, lines 34-56. Redefining the polyester as being the dopant is inconsistent with ordinary meaning and usage in Antoniadis.

Reconsideration and withdrawal of the § 102 rejections based upon Antoniadis are requested.

Claim rejected under 35 U.S.C. § 103 based on Shirasaki & Tamano

Claim 8 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Shirasaki as applied to claim 7 and in further view of U.S. Patent No. 6,150,042 to Tamano *et al.* (“Tamano”). Applicants respectfully submit that the teachings of Tamano do not address the deficiencies of Shirasaki, discussed above. In particular, the cited passages do not suggest solvent-induced diffusion.

Claims rejected under 35 U.S.C. § 103 based on Shirasaki & Yuh

Claims 37-40 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Shirasaki as applied in claim 1 and in further view of U.S. Patent No. 5,521,047 to Yuh *et al.* (“Yuh”). Yuh is directed to electrophotographic imaging. In a discussion of U.S. Patent 4,855,203 cited by the examiner, Yuh discloses a varied list of organic pigments and organic solvents. In context however, the materials are described for the preparation of a spin coating (*see* USP 4,855,203 col. 1, lines 9-19). This is an example of the technology which Shirasaki is explicitly trying to avoid. *See* Shirasaki col. 1, lines 42-63 and col. 2, lines 59-65.

Claims rejected under 35 U.S.C. § 103 based on Antoniadis & Yamazaki

Claims 2, 3, 5 and 30-31 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Antoniadis as applied to claims 1 and 28 and in further view of U.S. Patent No. 5,538,548 to Yamazaki (“Yamazaki”). Applicants respectfully submit that the teachings of Yamazaki do not address the deficiencies of Antoniadis, discussed above. In particular, the cited passages do not suggest solvent-induced diffusion.

Claims rejected under 35 U.S.C. § 103 based on Antoniadis & Honjo

Claims 37 and 39 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Antoniadis as applied to claim 1, in further view of U.S. Patent No. 4,218,362 to Honjo *et al.* (“Honjo”). Applicants respectfully submit that the teachings of Honjo do not address the deficiencies of Antoniadis, discussed above. In particular, the cited passages do not suggest solvent-induced diffusion.

Claims rejected under 35 U.S.C. § 103 based on Shirasaki & Chang

Claims 5 and 36 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Shirasaki in view of Chang *et al.*, Appl. Phys. Lett., Vol. 73, No. 18, 2 November 1998, *pp.* 2561-2563 (“Chang”). Applicants respectfully submit that the teachings of Chang do not address the deficiencies of Shirasaki discussed above. In particular, the cited passages do not suggest solvent-induced diffusion.

Claims rejected under 35 U.S.C. § 103 based on Shirasaki, Chang, & Tamano

Claim 8 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Shirasaki in view of Chang as applied to claims 5 and 36 and in further view of Tamano. Applicants respectfully submit that the teachings of Chang and Tamano do not address the deficiencies of Shirasaki discussed above. In particular, the cited passages do not suggest solvent-induced diffusion.

Claims rejected under 35 U.S.C. § 103 based on Shirasaki & Hebner

Claims 5 and 36 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Shirasaki in view of Hebner *et al.*, Appl. Phys. Lett., Vol. 73, No. 13, pp. 1775-1777 (“Hebner”). Applicants respectfully submit that the teachings of Hebner do not address the deficiencies of Shirasaki discussed above. In particular, the cited passages do not suggest solvent-induced diffusion.

Claims rejected under 35 U.S.C. § 103 based on Shirasaki, Hebner, and Tamano

Claim 8 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Shirasaki in view of Hebner as applied to claims 5 and 36 and in further view of Tamano. Applicants respectfully submit that the teachings of Hebner and Tamano do not address the deficiencies of Shirasaki discussed above. In particular, the cited passages do not suggest solvent-induced diffusion.

Allowed claims

Applicants thank the examiner for indicating that claims 15-21 and 23-27 are allowed.


CONCLUSION

Applicants authorize the Commissioner to charge any fees determined to be due under 37 C.F.R. § 1.16 or § 1.17 or credit any overpayment to Deposit Account No. 11-0600.

The Examiner is invited to contact the undersigned at (202) 220-4209 to discuss any matter concerning this application.

Respectfully submitted,
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